Directions for Preparation and Use of Insecticides and Fungicides PLUMBING

The following formulae for the preparation and use of insecticides and fungicides are in accordance with the best practice. This calendar has been prepared exclusively for the fruit and truck growers of the Rogue River Valley; and, with this fact in view, only such matter is included as is thought necessary for the intelligent use of insectides and fungicides in the control of such insect pests and fungous diseases as are of economic importance in the valley. For this reason, the treatment of such diseases as the Brown Rot of stone fruits, the various leaf spot diseases, the Bitter Rot of apples, etc., is omitted. Pear and apple scab, so serious in many sections, is of no economic importance in the Rogue River Valley. Only in some of the higher mountain valleys, where air drainage is insufficient, is scab found at all, and even there commercial varieties are rarely seriously attacked.

BORDEAUX MIXTURE

This	is the	Htat	ndar	d fi	al)	*P	ray	for	apple	s and	stone	fruits.
Bluesto	ne (co)	pper	nuly	hat	te)		#C# ()	4.8.9			5	pounds
Lime (pounds
Water		STATE OF	91414		N. L.	100	K 4 6	64 CK 10 1	ACATE WASHIN	DESCRIPTION OF THE PARTY OF	50	Kailon

Dissolve the bluestone by suspending it in a sack in water, and dilute to 25 gallons. Blake the lime to an even paste and add water to make 25 gallons. Mix these dilute solutions by pouring together slowly into the spray tank or barrel. Strain through a 20-mesh strainer made of brass wire while pouring into the spray tank. In large operations it is best to prepare stock solutions of both bluestone and lime. The bluestone may be dissolved at the rate of one pound per gallon of water.

The lime may also be slaked, but not too far in advance of the time necessary to use it. By having a sufficient number of barrels for stock solutions, one man can easily keep three or four power spray outfits supplied with the Bordeaux mixture. An elevated platform upon which the mixing may be done will save a great deal of time. As little hand labor as possible should be the rule, and all that should be necessary in a well appointed mixing plant should be simply opening and closing valves or gates. A scale to weigh the materials used should be a necessary part of the equipment.

RESIN-BORDEAUX MIXTURE

This is the	Acres Alexander	spray	for	blackberries,	raspherries
					and the second

Boil together until a clear brown color appears; then add the above to each 50 gallons of Bordeaux mixture made according to the 5-5-50 formula, given above. The reason for using the resin mixture is to cause the Bordeaux to spread and adhere better. The Resin-Bordeaux should be applied with a good spray pump and a nozzie giving a very fine mist apray. Keep the mixture well agitated, and before using Lime-suiphur (52 degrees Beaume test) 1 quart remember that it should be carefully strained so as to keep out all material which would tend to clog the nozzie.

LIME SULPHUR

This is the standard spray used during the spring for all fruit trees, vines, shrubs, etc., before the buds open. Limesulphur in concentrated form may be purchased, but there are many who prefer to boil their own solution. The propor-tions of lime, sulphur and water, according to the most recent

Lin Sul Wa	phi	ir	-	fl	ø	111	Q1	r)	fl	0.	W	et	18	1	A.	ö	ú	'n	ä	ò	ä	'n	é	3	á	×	×	'n	ż	ě	ú	2	12	ŧ.	p	01	thi	dn
a11	In																																					

by 50.	The form	illiw alun	read	4	
Lime (nslaked				 50 pound
					110 pound

start the fire. Place the lime in the kettle, and, after slaking Water has well started, add the dry sulphur and mix it thoroughly, adding water enough to maintain a thin paste. Sift the sulphur so that there will be no lumps. After the slaking and mixing are completed, add water to about 50 gallons on the measuring stick or to a mark on the side of the boiler, and boil, stirring until the sulphury seum disappears. Then add water to about the height of 60 gallons and boil down to about 55 gallons if the spray is to be used at once. If it is desired to keep it for a short while, it may be boiled down to 50 gallons. During the boiling process the mixture should be well stirred. As a rule, 60 minutes of vigorous boiling because the exact amount of any considering the fact that for each degree Beaume there is about three fourths of one per cent combined sulphur present, it will be easy to calculate the exact amount of any considering the fact that for each degree Beaume there is about three fourths of one per cent combined sulphur present, it will be easy to calculate the exact amount of any considering the fact that for each degree Beaume there is about three fourths of one per cent combined sulphur present, it will be easy to calculate the exact amount of any considering the mixture thoroughly, then spray with good agitation. If the lime-sulphur tests less than 32 degrees, add a little more; if over 32 degrees, a little less.

Considering the mixture thoroughly, then spray with good agitation. If the lime-sulphur tests less than 32 degrees, add a little more; if over 32 degrees, a little less. has well started, add the dry sulphur and mix it thoroughly, adding water chough to maintain a thin paste. Sift the sulwell stirred. As a rule, 60 minutes of vigorous boiling will cause the sulphur to unite completely with the lime. A slow fire will necessarily take longer. Do not overboil; when the sulphur has combined with the lime and the mixture is to be applied at once, continued boiling only adds expense and does not help or benefit the spray. Properly made limelittle sediment. After settling and cooling, the mixture should be tested with a hydrometer. The following table, which may be tested with a hydrometer. The following table, which may be used for the commercial as well as the home-boiled lime-sulphur, indicates the proper dilution for the various concen-water boiling, pour in fish cil, and boil for two hours. When

Table for Diluting Concentrated Lime-Sulphur Solutions

Reading	of Hydrome												
Degrees	Specific	Number gals, water to	one gal. lime-										
Beaume	Gravity	aulphur solution. For d	ormant spraying.										
40	1.357	1 gal, lime-sulphur	11.0 gals, water										
39	1.345	I gal lime-sulphur	10.5 gals, water										
38	1.333	1 gal, lime-sulphur	10.1 gals, water										
37	1.322	1 gal, lime-sulphur	9.7 gals, water										
36	1.310	1 gal, lime-aulphur	9.3 gals, water										
3.6	1.299	1 gai, lime-sulphur	9.0 gals, water										
24	1.288	1 gal, lime-sulphur	8.6 gals. water										
33	1.277	I gal. lime-sulphur	8.2 gals. water										
32	1.267	1 gal, lime-sulphur	7.9 gals, water										
31	1.256	1 gal, lime-sulphur	7.5 gals. water										
30	1.246	1 gal, lime-sulphur	7.2 gals. water										
29	1.236	1 gal. lime-aulphur	6.9 gals. water										
28	1.226	1 gal, lime-sulphur	6.5 gals, water										
27	1.216	1 gal, lime-sulphur	6.2 gals. water										
26	1.206	1 gal, lime-sulphur	5.9 gals. water										
25	1.197	1 gal. time-sulphur	5.6 gals, water										
24	1.188	1 gal, lime-sulphur	5.3 gals. water										
23	1.178	1 gal, lime-sulphur	4.9 gals, water										
22	1.169	1 gal, lime-sulphur	4.6 gals. water										
21	1.160	1 gal, lime-aulphur	4.3 gals, water										
20	1.152	1 gal, time-sulphur	4.1 gals. water										

This table is constructed for a dilution of 4.5 degrees Beaume or its equivalent 1.030 specific gravity.

Tables Comp	paring Beaume	e's Hydrom	eter and Speci	fic Gravities
(TO) TO TO TO TO TO TO TO	ACT 1777.75.75 20.35M	Commence Commence	cific Degree	The second secon
1	1.007 15.		109 28	1.216
3	1.020 17.		126 30	1.236
	1.034 19.	1.	143 32	1.267
27 C C 2 C C C C C C C C C C C C C C C C	1.056 22.	1.	169 35	1.288
10	1.070 24.		188 37	1.310
12 13	1.086 26.	Contract of the Contract of th	206 39	1.345

Rules for Determining Number of Dilutions and Density of destroying soft bodied insects like plant lice, young squash

Spray. If the density of the commercial solution or the home made wash has been first determined by the use of a hydrom-eter, sprays of any desired density may be calculated by using the above table. Hydrometers do not detect impurities in lime-sulphur solutions; these can be determined only by chemical analyses. The rule for obtaining the number of dilutions is as follows: Divide the decimal of the concentrate

concentrate is .288 and 13.4 volumes of water are added to it. 13.4 plus 1 equals the number of dilutions. 288 divided by 14.4 equals .020 which is the decimal of the spray and corresponds to 3 degrees Beaume.

SELF-BOILED LIME SULPHUR

This is the standard summer spray for peaches and other stone fruits to prevent the fruit spot disease. Its use, however, is never necessary if proper fall spraying with Bordeaux has been done. This spray is much safer than dilute lime-suiphur solutions, as it will not injure foliage. It may be used to prevent apple and pear scab where this disease appears it also has a beneficial effect in a limited way in the control

The lime should be placed in a barrel and enough water poured on to almost cover it. As soon as the lime begins to slake, the sulphur should be added after alfring it so as to break the lumps. The mixture should be stirred and more water added as needed to form a thick paste at first and then gradually a thin paste. The heat of the slaking lime will cook the mixture and from 5 to 15 minutes will be necessary, according to the quickness of the lime. Be sure not to let it overcook as this would tend to form compounds which would burn. As soon as the sulphur and lime have reached the paste state, fill up the barrel to 50 gailons with cold water. Do not use any hot water in making this mixture. For large operations, proportionate amounts of lime and sulphur should be used, and it will be found that it is easier to make large quantities than small amounts.

THE IRON SULPHIDE SPRAY

This is the standard apray for apple and rose mildew for this district. The following formula is for summer use, or after the buds have opened.

Dissolve the iron sulphate in about 5 gallons of water and add the quart of lime-sulphur, stirring well. Let the black precipitate settle for a few hours and pour off the liquid. keeping the precipitate. Then add 5 gallons of water, stir thoroughly and let settle again. Pour off the liquid as be-fore. This process is called washing, and is necessary in order to get rid of the excess lime-sulphur which would burn tender foliage. Repeat the washing until the water is no longer yellow. The black "muck" should be diluted to 10 gallons and sprayed with good agitation. If plant lice are present tobacco extract or kerosene emulsion may be mixed with it. Arsenate of lead for the codling moth may also be applied the same micture without any injurious effect. For makin up large quantities, proportionate amounts of the material

should be used.
It is often necessary to apply the iron sulphide before the

Put about 10 gallons of water in the kettle or boller and Lime-sulphur (32 degrees Beaume test) 15 quarts

centrated lime-sulphur solution which must be added, if the

DISTILLATE-OIL EMULSION This is the standard spray for thrips.

Water

soap has boiled sufficiently it should have a ropy effect when stirred. This formula gives about 40 pounds of moderately firm soap.
The distilliate-oil stock emulsion should be made as fol- lows:
Hot water
Have the water boiling when put into the spray tank and add soap while agitator is running at good speed. When soap is thoroughly dissolved, pour in the distillate-oil slowly, keeping the mixture well agitated. When oil and soap are well mixed, pump out through the spray nozzle at a pressure of not less than 175 pounds into a storage tank. This is the stock emulsion, and contains 55 per cent oil. To make a 3 percent emulsion use 5 ½ gallons of this stock in each 100 gallon tank. To dilute, first put the stock emulsion in spray tank and then add water, keeping agitator running. To make the spray more effective, tobacco black leaf or sulphate of nicotine may be added after the emulsion has been diluted. The amount of each to add will be in accordance with the formulae given elsewhere.

KEROSENE EMULSION

Kerosene Hard soap (whale-oil Water	soap)				14 pound
Dissolve soap in kerosene. Do not di with a spray pump se utes the mixture bec stock solution at the water. This is a state woolly aphis, mealy used instead of the t	o this roomes comes come	emulaif reamy. of one emedy and oth	fire. To use gallor for dear	Agitate iii. Af ie. dilu i to 1 iroying it lice.	the mixture ter five min- te the above gallons of green aphis. It may be

WHALE-OIL SOAP AND QUASSIA

Quassia Water .			*****			5 pounds
gallons of	d th	ter an	d soal	k for 24 b	til dissolve	er with about 10 n boil, remove the d. Add water to soap see formula

ARSENATE OF LEAD	
Arsenate of lead	
It is better to purchase arsenate of lead than to to make it. In mixing, preparatory to spraying, the of arsenate of lead for each spray tank full should be into a very thin paste having the appearance of milk of it should never be thrown as a mass into the spray	worked of lime.

					(1)						1 3 1
Tobacco Water .	black	leaf .	***				 			1	gallon
Water .							 			65	gallon
					(2)						
Sulphate	of nice	otine	(bla	ck le	lat	40)	 				. 1 pin
Water								.112	to 1	25	gallon

HELLEBORE

This is valuable as an insectide for use on vegetables	which are almost ready cannot be used.	for	market	and on	which	arsenicale
	Water					1.4 5.00

PYRETHRUM

Pyrethrum	gallons

CARBOLATED LIME

This into the	may soil.	be	used	tor	root	maggots.	Work	the	mixture
Carbolic	acid	(er	ide).					. 1 to	2 pinte
Blake water an						e water, a	dd the	rest	of the

CARBOLIC ACID EMULSION

This, like and young m					to destroy	
Carbolic acid Soap (hard) Water	 	 	 	 	1 pc	baund

Dissolve soap in boiling water; add acid and stir or churn, as in making kerosene emulsion, until the substance become ereamy. To use, dilute one part of the emulsion by adding 30 parts of water.

BRAN. ARSENIC MASH

_	A STATE OF THE PARTY OF THE PAR												
۰	White	arsen	le .			See			dex		*****	1	pound
8	Brown	muga:	10)	mo	lass	es).		V-0-1		B. P. P. W.		to 2	pound
ĸ,	Bran .		0.00		(0.00		10		× 1 1	****	Arrest.	6	pound
u	- 44		Carry	STREET,	Carrer .			100			100		S. C. S.

Thoroughly mix the above and add enough water to make thoroughly wet. A spoonful should be placed near the crown or each tree. The mash may be used to kill grasshoppers, but it is usually heat to cover the trees and use the Bordeaux

BRAN-PARIS GREEN MASH

3	Par	is	-	le	e	ez	1	÷		,	×	ź	ķ			Ü	.,		,		6	ļ,	į,		į,	9			á		*	ě	w	ė	٤,	ŧ,	*		*:	.1	pound pound pound pound
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4	Mol	a	,	ėı	ĸ	0	r	,	u	g	A	r	b		.,	b	ö	ò	Ö	Ü				×	×			*	ķ.	٠	•)	•	ĸ	ě,	o	ď	1	t	O	2	pound
1	Sall	я	٠	×	*)			*			*	ē	٠	ĸ.		Ö	8 ()	n)	63	6.7	63	G		à	4	0	(A	×	6	٠	٠	ě.	Æ.		ġ.	٠		ř		16	pound

is valuable for destroying cut worms in young onlone.

FORMALIN

ı	(Formaldahyde)	
ŀ	Formalin (40 percent solution)	1 pint
ł	Water	gallons
t	This is a preventive of potato scab and smut of	grains.

Smut of onlone may also be prevented by treating the seed Practically all garden seeds will be disinfected by the use of

CORROSIVE SUBLIMATE

Thi	s i	. 1	he	2.1	sta	ın	di	H	d	d	li	si	n	e	ct	a	at		wi	he	n	ro	rl	kİ	n	B.	w	ith	PE	AI
BLIGH																								ıe	a	. 5	0	Wa	AD	t m
Corres	re	*	ub	tt	m	ı te	•							٠,				×	v.							٠,	2	1	ps	irt
Water																														

Corrosive sublimate may be purchased in tablet form at drug stores, and directions for making solutions will be found on the container. Never put corrosive sublimate into a metallic container, always use a glass bottle. Be sure to label the bottle "POISON" in large, plain letters. It is the deadliest

PINE TAR

1	For soil-infesting, seed-eating insects such as the wire worm, tar may be used with good results.
1	Pine tar
	Dampen the seeds, such as corn, squash, canteloupes, etc. with a little warm water. Put in the far and mix thoroughly; allow to dry before planting. The far acts as a repellant.

STICKY PREPARATIONS

(Tanglefoot)

Tanglefoot may be purchased in caus or pails It is manufactured by O. and W. Thum Co., Grand Rapids., Michigan. By putting it on bands of paper or strawboard secured about the trunks of trees, it will catch such insects as creep up or down the trunks of trees. It will not dry readily, and one application will last a long time.

WHITEWASHES

	Governm	(1) ent Whitewash	
Lime (unslaked			
Salt			
Rice flour (or			
Spanish whiting		***********	1/2 pour
Glue			1 pour
Water	********	*********	5 gall

Slake the lime in warm water and cover so as to keep in the steam; strain through a fine sleve or strainer; add the salt, well dissolved, in warm water. Then add the rice boiled hot; the Spanish whiting, and finally the glue which has been previously dissolved over a slow fire. Lastly, add the five gallons of hot water. Stir well and let stand for a few days. Apply hot with a brush. One pint of the mixture will cover a square yard. Coloring matter may be put in, such as Spanish brown, yellow ochre, etc.

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Lime																																												
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Salt																																												
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be pr	ot	ec	tı	м	в	fı	×	ì	n	а	H	u	r	8	¢1	u	đ	ä	b,	ÿ	1	11	ı	n	g	a	u	le	1	a	p	o	*	٠	×	ri	ü	b	4					

WHITE LEAD PAINT

White lead, slightly thinned with lineeed oil, should be used where large cuts are made, or in case where the wood is exposed by the removal of the bark and cambium as in the case of pear blight eradication. It should not be applied in the latter case until it is certain that the disease has been eradicated.

GRAFTING WAX

(1)	1000	(2)		(3)
Resin4 Beeswar2 Tallow1	pounds	3 pounds 2 pounds 2 pounds	Linseed oil	4 pounds 2 pounds 1 pint

GRAFTING WAX FOR WALNUTS

(1)		(2)	
Beeswax	pounds pint	Beeswax 1 Resin 5 Linseed oil 1 Flour 1	pin

Steam and Hot Water

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